

What is claimed is:

1. A method of manufacturing a semiconductor device, comprising:
  - (a) cleaning in a Single Wafer Processing Equipment a surface of a semiconductor substrate not using ultra-pure water rinse but  
5 using a cleaning agent containing one of a chemical solution having an organic solvent as a main component and a vapor of said solution.
2. The method according to claim 1, further comprising, before the step (a), (b) forming a film on said semiconductor substrate and (c) partially removing said film.
3. The method according to claim 1, further comprising, before the step (a), (d) depositing a metal film and an insulating film on the semiconductor substrate in this order and (e) partially removing said insulating film to expose at least a part of a surface  
5 of said metal film.
4. The method according to claim 1, wherein the step (a) includes (f) spraying said cleaning agent on said surface of said semiconductor substrate while rotating said semiconductor substrate.
5. The method according to claim 4, wherein in the step (f), said cleaning agent is sprayed onto said surface of said semiconductor substrate while a portion to be sprayed is moved from a center of said substrate to a periphery of said substrate.
6. The method according to claim 1, wherein the step (a) is performed as a rinse step after wet process using a chemical solution and wherein the step (a) includes (g) simultaneously

spraying a liquid having resistivity lower than that of pure water  
5 and said cleaning agent onto said surface of said substrate, and  
wherein in the step (g), portions to be sprayed with said cleaning  
agent and said liquid are moved from a center of said substrate  
to a periphery of said substrate while said portion to be sprayed  
with said cleaning agent is kept nearer said center of said  
10 substrate than said portion to be sprayed with said liquid.

7. The method according to claim 1, wherein said semiconductor  
substrate is a silicon wafer.

8. The method according to claim 1, wherein said surface of  
said semiconductor substrate includes an exposed portion of a  
semiconductor material.

9. The method according to claim 1, wherein said surface of  
said semiconductor substrate includes an exposed portion of a  
metal material.

10. The method according to claim 1, wherein said organic  
solvent contains at least one selected from the group consisting  
of isopropyl alcohol, ethylene glycol, cyclopentanone,  
methylethylketone and glycol ether.

11. The method according to claim 1, further comprising, after  
the step (a), (h) drying said surface of said semiconductor  
substrate by rotating said semiconductor substrate in an inert  
gas atmosphere.

12. An apparatus for cleaning a substrate, comprising:

a substrate pedestal for holding and rotating a  
semiconductor substrate;

a first supply port for supplying a liquid having

5 resistivity lower than that of pure water to a surface of said semiconductor substrate;

a second supply port for supplying a vapor of a cleaning agent to said surface of said semiconductor substrate;

a third supply port for supplying a chemical solution to  
10 said surface of said semiconductor substrate; and

a moving member for moving said first and second supply ports from a central portion of said semiconductor substrate to a peripheral portion thereof while keeping said second supply port closer to said central portion of said substrate than said first  
15 supply port.

13. The apparatus according to claim 12, wherein said third supply port is fixed at a predetermined position relative to said substrate pedestal.